Name: _____

Exponents Quiz

1.) Use your exponent laws to simplify the following. Leave your answers with **positive exponents**.

$x^2 \cdot x^4$

x^{2+4}

x^6

$\frac{x^5}{x^2}$

x^{5-2}

x^3

$\frac{x^5 \cdot x^3}{x^2}$

$\frac{x^8}{x^2} = x^6$

$3x^2 \cdot 4x^4$

$12x^6$

$\frac{10x^5}{2x^2}$

$5x^{5-2}$

$5x^3$

$(x^3)^4$

x^{12}

$\frac{x^{-5} \cdot x^3}{x^2}$

$\frac{x^{-2}}{x^2}$

x^{-2-2}

x^{-4}

$\frac{1}{x^4}$

$(2x^4)^3$

$2^3 x^{12}$

$8x^{12}$

$(2x^4)(2x^4)(2x^4)$

$8x^{12}$

2.) Solve for x:

a) $x=7t^2m$, t=2, m=3

$X = 7(2)^2(3)$

$= 84$

b) $6x=7yz$, y=3, z=4

$6x = 7(3)(4)$

$6x = 84$

$x = \frac{84}{6}$

$x = 14$

3.) It is not safe for an adult to surpass her or his maximum heart rate. This maximum heart rate, M, in beats per minute, is modeled by the equation $M = 230 - 1.2A$, where A is the age of the adult, in years. At what age should a person's maximum exercising heart rate be 194 beats per minute?

$M = 230 - 1.2A$

$194 = 230 - 1.2A$

$194 - 230 = -1.2A$

$-36 = -1.2A$

$\frac{-36}{-1.2} = A$

$30 = A$

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4.) Evaluate

a) $8^3 =$ 512

b) $(-4)^5 =$ -1024

c) $(-36)^0 =$ $-36^0 = -1$

d) $2^{-5} =$ $\frac{1}{2^5}$ $\frac{1}{32}$

e) $(-2)^{-3} =$ $\frac{1}{(-2)^3}$ $-\frac{1}{8}$ $\left\{\frac{-1}{8}\right\}$

f) $\left(\frac{-2}{3}\right)^5 =$ $\frac{(-2)^5}{3^5}$ $\frac{-32}{243}$

5.) Simplify. Then evaluate if x=2 and y=-1

$\frac{(x^5y)(x^{-1}y^4)}{(x^3y^{-2})^4} =$

$\frac{x^4y^5}{x^{12}y^{-8}}$

$x^{-8}y^{13}$

$\frac{y^{13}}{x^8}$

$\frac{(-1)^{13}}{2^8}$

$\frac{-1}{256}$